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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,198	10/31/2003	Jose Carlos Garza-Davila	120426-2020A (124809A)	3473

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NEW YORK, NY 10151

EXAMINER

TUROCZY, DAVID P

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/699,198

Applicant(s)

GARZA-DAVILA ET AL.

Examiner

David Turocy

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 11-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claims 11-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 4/18/2005.

Applicant's election with traverse of Group I in the reply filed on 4/18/2005 is acknowledged. The traversal is on the ground(s) that a search of one group would encompass prior art for the second group. This is not found persuasive because an apparatus is patentable only in regards to structure rather than intended use and the apparatus as claimed can be utilized to perform another materially different process.

The requirement is still deemed proper and is therefore made FINAL.

### ***Information Disclosure Statement***

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### ***Drawings***

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The abstract of the disclosure is objected to because the abstract is too lengthy, with over 150 words. Correction is required. See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4645694 by Gerard et al., hereafter Gerard in view of US Patent 5912055 by Gore et al., hereafter Gore, and further in view of Kirk-Othmer, US Patent 3956821 by Martin, hereafter Martin and the admitted state of the art as taught by the applicant description.

Gerard teaches a method of galvanizing two different coatings on a metal band using a dual tank method (Abstract). Gerard discloses withdrawing an amount of a first molten metal from the first tank to provide sufficient space for the second tank, partially immersing the second tank with the first tank in heat transfer contact with the first coating metal and subsequently filling the second tank with a second different molten metal (Column 1, line 65 - Column 3, line 42). Gerard discloses controlling the temperature of the second molten metal by controlling the heating means on the first tank (Column 1, line 65 - Column 3, line 42). Gerard discloses the molten metal in first and second tank have about the same upper level (Figure 2).

Gerard fails to disclose changing over from an aluminum-zinc alloy to a molten zinc alloy.

However, Gore teaching of continuous hot dip metal using a dual pot system discloses using a first pot comprising aluminum-zinc alloy comprising 25 to 70 wt % aluminum, which produces superior coatings, and a second pot comprising normal galvanizing using a zinc alloy containing about 0.2 wt% aluminum (Column 1, lines 26-33). Gore discloses the aluminum-zinc alloy is in production in certain areas where there is still demand for standard zinc alloy coatings (Column 1, lines 35-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gerard to use the first coating metal as molten zinc/aluminum alloy and a second coating metal as molten zinc alloy as suggested by Gore to provide a desirable production of galvanized metal on a continuous strip

because Gerard discloses producing two different coatings on a metal strip and Gore discloses certain industrial areas demand production of both superior zinc/aluminum alloy coatings and standard zinc alloy coatings.

Gerard in view of Gore fails to disclose modifying the composition of the molten metal bath in the first bath so that the melting temperature of the first tank is below the operating temperature of the second tank.

However, Kirk-Othmer discloses the operating temperature of a zinc molten metal bath is 445-465°C and also discloses an aluminum containing composition has a high melting point when compared to zinc. In particular Kirk-Othmer discloses a known superior aluminum-zinc alloy coating composition, which provides two to six times the life of a typical zinc coating, includes 55% aluminum, 43.4% zinc, and 1.6% silicon, which is within the range as claimed.

In addition Martin discloses an Al-Zn phase diagram, where the superior coating as taught by Kirk-Othmer has a melting point over 550°C, which is above the operating temperature of the second zinc alloy bath (Figure 4). The phase diagram discloses, following line (60), that the reduction of the weight percent of aluminum results in the reduction in the melting temperature, i.e. by increasing the weight percent of zinc in the molten metal bath results in a reduction of melting temperature (Figure 4). In addition the admitted state of the art as taught by the applicant description discloses that it is known in the art for the metal to remain in the molten state within the tank when not in

Art Unit: 1762

use because of thermal shock which produces cracks in the ceramic lining (Page 5, specification).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gerard in view of Gore to use the superior coating composition as suggested by Kirk-Othmer to provide a desirable coating on a metal strip because Kirk-Othmer discloses coating comprising 55% aluminum, 43.4% zinc, and 1.6% silicon is known in the art to provide superior coating to zinc and one of ordinary skill in the art would desire to reap the benefits of a coating with a longer life.

In addition, it would have been obvious to one skilled in the art at the time of the invention to modify Gerard in view of Gore and Kirk-Othmer to increase the zinc composition in order to decrease the melting temperature of the molten aluminum-zinc alloy suggested by Martin to provide a desirable first molten metal with a melting temperature sufficient effectively control the temperature of the molten zinc composition within the operating temperature because Gerard in view of Gore teaches a first aluminum/zinc bath temperature controlling the temperature of a second zinc alloy bath with an operating temperature of 445-465°C and Martin teaches increasing the zinc weight percent in a aluminum-zinc alloy effectively reduces the melting temperature.

Claim 4: The operating temperature of the second coating bath, zinc alloy, ranges from 445-465°C as taught by Kirk-Othmer and, however, Gerard in view Gore, Kirk-Othmer, Martin, and the admitted state of the art as taught by the applicant



Art Unit: 1762

description fails to explicitly disclose lowering the weight percent of aluminum from 55% to 10%, the Al-Zn Phase diagram as taught by Martin discloses adding zinc by weight, inherently reducing the weight percentage of aluminum, results in a reduction of melting temperature is thus a cause effective variable.

It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as aluminum weight percent to reduce the melting temperature of the first bath at the operating temperature of the second bath through routine experimentation in the absence of a showing of criticality. *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claim 5: The modified bath as taught by Gerard in view Gore, Kirk-Othmer, Martin, and the admitted state of the art as taught by the applicant description fails to teach of a density. However, the prior art and the present claims, reflected by claim 5, teach all the same process steps and thus the results obtained by applicants process must necessarily be the same as those obtained by the prior art. Therefore by modifying the composition of the first bath to be below the operating temperature of the second bath by the addition of zinc, it must necessarily result in an alloy with a density within the range as claimed. Either 1) the applicant and the prior art have different definitions adding zinc to the molten bath, or 2) the applicant is using other process steps or parameters that are not shown in the claims.

Claim 10: Gerard discloses returning the operation to the first molten metal by withdrawing the metal from the second tank and removing the tank and then returning the first molten metal to its original state by addition of ingots or liquid metal, which inherently results in adjusting the volume and composition (Column 1, line 65 - Column 3, line 42).

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerard in view Gore, Kirk-Othmer, Martin and the admitted state of the art as taught by the applicant description and further in view of US Patent Publication 2002/0145237 by Sieradzki.

Gerard in view Gore, Kirk-Othmer, Martin and the admitted state of the art as taught by the applicant description teaches all the limitations of this claim as applied to claim 5 above and in addition Gerard discloses using a preheating oven at column 3, line 30, but fails to teach of preheating the second tank to a temperature about 400°C.

However, Sieradzki discloses it is known in the art to preheat objects prior to contact with molten metal to prevent thermal shock.

Therefore it would have been obvious to one of ordinary skill in the art to modify Gerard in view Gore, Kirk-Othmer, Martin and the admitted state of the art as taught by the applicant description to preheat the tank prior to the addition of molten metal as suggested by Sieradzki because Gerard in view Gore, Kirk-Othmer, Martin and the admitted state of the art as taught by the applicant description teaches even a slight

Art Unit: 1762

change in temperature may result in thermal shock of the ceramic tank lining and Sieradzki suggests preheating prior to contacting with molten metal reduces thermal shock.

Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, and Sieradzki fails to teach of preheating to 400°C. It is the examiners position that process parameters of temperature are known result effective variable. If preheating temperature were low it would still result in thermal shock and too high a preheating temperature would result in no added benefits of increase protection against thermal shock.

Therefore it would have been obvious to one skill in the art at the time of the invention was made to determine the optimal value for the preheating temperature used in the process of Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, and Sieradzki, through routine experimentation, to impart the ceramic liner with the desired temperature to minimize thermal shock.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, and Sieradzki and further in view of Japanese Patent 2001-164349 by Arioka et al., hereafter Arioka.

Art Unit: 1762

Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, and Sieradzki teaches all the limitations of this claim as applied to claim 6 above, but they fail to disclose removing dross from the surface of the molten metal.

However, Arioka discloses it is known in the art to remove dross which is floating on the surface of a molten bath (Abstract). Arioka discloses the surface appearance of the coated substrate is improved because of the removal of the dross (Abstract).

Therefore it would have been obvious to one of ordinary skill in the art to modify Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, and Sieradzki to remove the dross floating of the molten metal surface as suggested by Arioka because Arioka discloses removing dross from the surface of a molten bath improves the surface appearance and therefore one would reasonably desire to reap the benefits of an improved surface appearance.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, Sieradzki, and Arioka and further in view of US Patent 6503442 by Fukubayashi, hereafter Fukubayashi.

Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, Sieradzki, and Arioka teaches all the limitations of this claim as applied to claim 7 above, but they fail to disclose providing a zirconium-based coating on the exterior surface of the second tank.

However, Fukubayashi discloses a zirconium-based coating composition useful for resistance against highly corrosive environments including molten metals (abstract). In addition Fukubayashi discloses the coating composition allows for extending the surface life of parts in contact with molten metal (Column 1, lines 8-12).

Therefore it would have been obvious to one of ordinary skill in the art to modify Gerard in view Gore, Kirk-Othmer, Martin, the admitted state of the art as taught by the applicant description, Sieradzki, and Arioka to coat the exterior surface of the second tank with a zirconium-based coating as suggested by Fukubayashi because Fukubayashi discloses increasing the service life of parts in contact with molten metal corrosive environments by application of a zirconium-based coating and therefore one would reasonably desire to reap the benefits of an the longer service life of the second tank.

12. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerard in view Gore, Kirk-Othmer, Martin, and the admitted state of the art as taught by the applicant description and further in view of Japanese Patent 59-123753 by Nakahara et al, hereafter Nakahara.

Gerard in view Gore, Kirk-Othmer, Martin, and the admitted state of the art as taught by the applicant description teaches all the limitations of this claim as applied to claim 1 above. In addition the admitted state of the art discloses that it is known in the art that any reduced temperatures from removal of molten metal results in thermal

Art Unit: 1762

shock of the lining of the tank (Page 2). However, they fail to teach of heating with a burner.

However, Nakahara teaches of known methods of heating the ceramic tanks during molten metal coating, by using for example a gas burner, electric heater, etc. (Page 4). While Nakahara does not teach of heating the ceramic liner, Nakahara does reasonably suggest gas burners are utilized during a molten metal process.

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Gerard in view Gore, Kirk-Othmer, Martin, and the admitted state of the art as taught by the applicant description to use the gas burner as suggested by Nakahara to provide a desirable protection against thermal shock because the admitted state of the art as taught by the applicants description teaches removing molten metal from a tank often, results in cooling of the ceramic liner, which results in thermal shock and Nakahara teaches gas burners are utilized for heating during molten metal coating process.

### ***Conclusion***

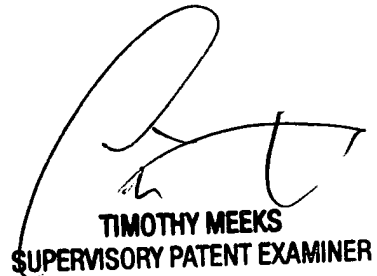
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Turocy whose telephone number is (571) 272-2940. The examiner can normally be reached on Monday-Friday 8:30-6:00, No 2nd Friday.

Art Unit: 1762

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Turocy  
AU 1762



**TIMOTHY MEEKS**  
**SUPERVISORY PATENT EXAMINER**